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ICHTHYOLOGICAL CONTRIBUTIONS
of the
INTERNATIONAL GAME FISH ASSOCIATION



Yellowfin, Allison's and Related Tunas

J. T. NICHOLS
and
FRANCESCA R. LAMONTE

September 1, 1941

INTERNATIONAL GAME FISH ASSOCIATION
Central Park West at 79th Street
New York City

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Yellowfin, Allison's and Related Tunas

By J. T. NICHOLS AND FRANCESCA R. LAMONTE

The tunas commonly taken by sportsmen may be divided generically into the Bluefin Tuna, *Thunnus*, of which there is only one species, *T. thynnus*, distinguished by its pectoral fins which are considerably shorter than the head, and short dorsal and anal fin lobes; and the Yellowfin Tunas, *Neothunnus*, in which the pectoral fins are as long as or longer than the head.

We propose to distinguish four species of Yellowfins: The Common Yellowfin Tuna, *N. albacora*, from Maryland south to Florida; west coast of Mexico (where it is erroneously called "Allison's Tuna"); Japan; New South Wales. The Allison's Tuna, *N. allisoni*, southern Florida and West Indies; tropical Pacific; not found off California. The California Yellowfin Tuna, *N. catalinae*, local to Southern California and overlapping the range of the Common Yellowfin southward. The Little Silver-marked Tuna, *N. rarus*, a small species, not running more than 30 pounds, found in Japan, the Hawaiian Islands, and probably cosmopolitan. The vertical fin lobes of Allison's Tuna are always much longer than those of the Common Yellowfin in fishes of approximately the same size, the anal lobe reaching back to beyond the base of the caudal fin in large individuals. Common Yellowfin and California Yellowfin may be distinguished by the short dorsal and anal lobes of the California Yellowfin.

Sportsmen around the world quite generally recognize the Bluefin and the Yellowfin Tuna. In many places the two occur together, but in general the Bluefin ranges into colder water, is found further north. The feeding habits of the two are similar, perhaps often identical, but the Bluefin seems to be the greedier and more intermittent feeder on a better grade of small fishes, the Yellowfin to feed more continuously, less selectively on anything that comes to hand.

On obscure anatomical grounds, ichthyologists refer these two tunas to different genera. *Thunnus* is the Bluefin and *Neothunnus* the Yellowfin Tuna. The most reliable superficial character to differentiate them (one usually appreciable in photographs) seems to be the length of the pectoral fin, which is considerably shorter than the head in *Thunnus*, about as long as, frequently somewhat longer than the head in *Neothunnus*. There is more yellow on the fins of the Yellowfin, it is true, but there is also a varying amount of yellow on the fins of the Bluefin.

It is generally conceded that there is more than one species of the genus *Neothunnus*. Jordan and Evermann (1926, Calif. Acad. Sci., Occ. Papers, XII) divide it into two genera, *Neothunnus* and *Kishinoella*, and recognize nine species in all, fish from widely separated localities mostly considered distinct. However, a not inconsiderable amount of miscellaneous data about such large mackerels that has come to our attention in the past 20 years, indicates that whereas they are common in some seas and rare in others, the well marked forms are cosmopolitan, though doubtless subject to minor geographic variation; and we consider various of these so-called species merely provisional races, as likely as not to prove undifferentiable.

Present knowledge of the forms of Yellowfin Tuna is in a state of uncertainty and confusion, but, subject to revision by further evidence, we recognize the following species.



fig. 1: California Yellowfin Tuna (weight 198½ pounds), taken off Santa Catalina Isl., Calif., Sept. 11, 1921, by Howard S. Dudley.

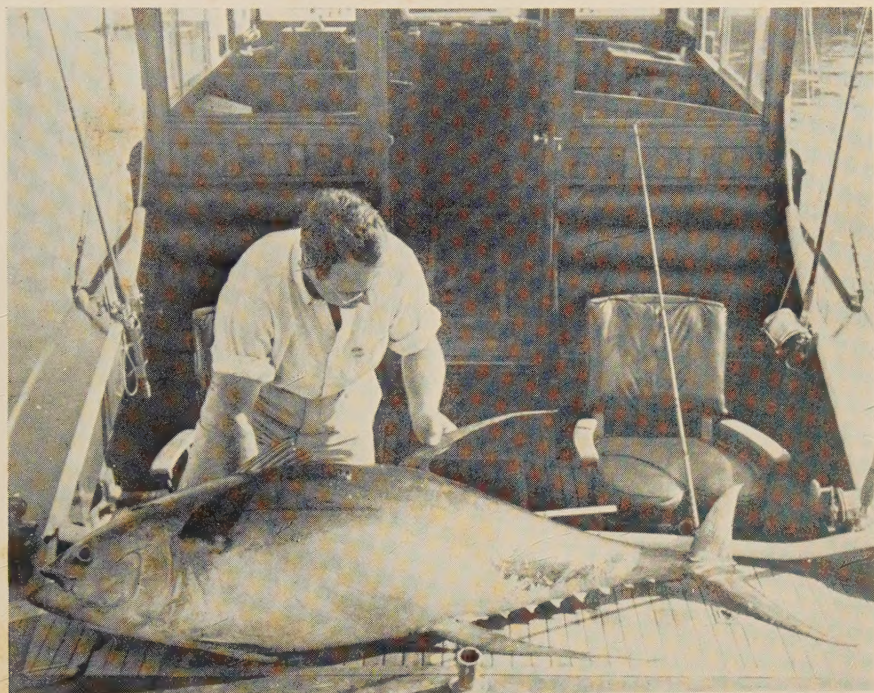


fig. 2: Common Yellowfin Tuna (weight $192\frac{1}{2}$ pounds), taken off Ocean City, Maryland, August 4, 1940, by James M. McCready.

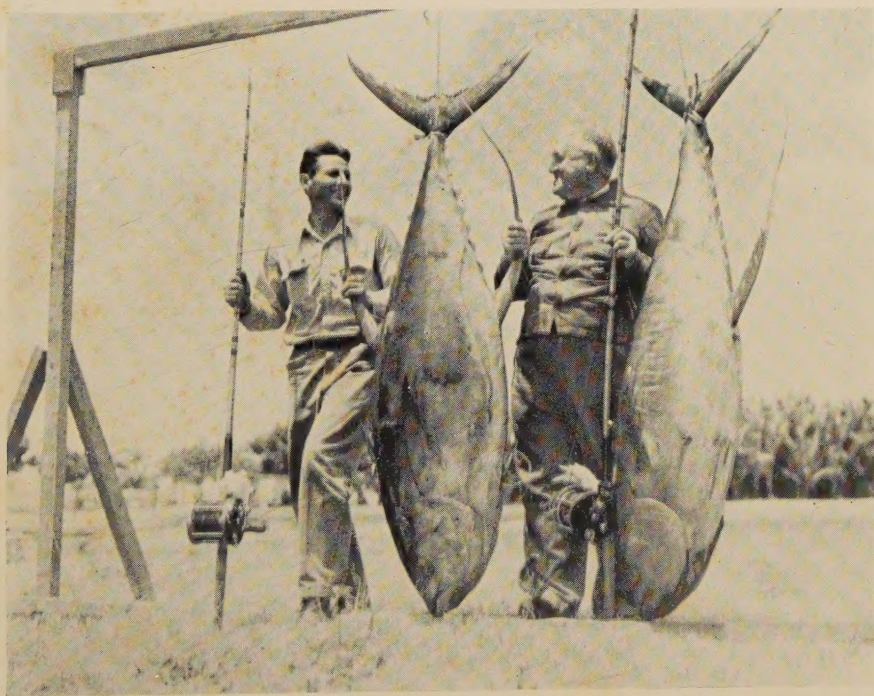


fig. 3: Allison's Tuna (weight of largest 265 pounds) taken off Makua, Hawaii, July 31, 1937, by James W. Harvey.

COMMON YELLOWFIN TUNA

Neothunnus albacora (Lowe)*Thynnus albacora* Lowe, 1839, Proc. Zool. Soc. London, p. 77, Madeira.*Thynnus macropterus* Temminck and Schlegel, 1844, Fauna Japonica, Poiss., p. 98, Pl. 51. Nagasaki.? *Neothunnus tonggol*, Jordan and Evermann, 1926, Calif. Acad. Sci., Occ. Papers, XII, p. 22, Sea of Java.*Neothunnus argentivittatus*, Beebe and Tee-Van, 1936, Zoologica [N. Y.], XXI (14), p. 184. Bermuda (not of Cuvier and Valenciennes).

It is unfortunate that the old name *albacora*, of the Madeira fish, concerning which we know little, has priority and must be used for the Common Yellowfin Tuna, instead of *macropterus*, the name of the well-known Japanese fish, commonly applied to it. The use of *argentivittatus* for its Atlantic form (in Bermuda) is also unfortunate. This was given a cosmopolitan distribution by Cuvier and Valenciennes, and has since been identified with a Peruvian species, probably not *N. albacora* as here understood (Nichols and Murphy, 1922, Bull. Amer. Mus. Nat. Hist., XLVI, p. 507, Pl. 25.).

As the Common Yellowfin Tuna grows larger, the lobes of its soft dorsal and anal fins become lengthened and exerted. The lengthening becomes rapid when the fish is more than 3 feet long. At about 3 feet these lobes become longer than those of the Bluefin Tuna and are contained about 5 to 7 times in the standard length, 1.5 to 1.9 times in the head (Japanese specimens); at 4 feet, 4.5 to 4.8 times in the standard length, 1.2 to 1.3 times in the head (Bermuda specimen); at about 5 feet, 2.6 to 2.8 times in the length, 0.64 to 0.70 in the head, that is the length of head is contained in that of the lobes 1.4 to 1.6 times (Portuguese specimen). At this length and with the fish weighing around 150 pounds, the lobes are approaching full development. A photograph of an unusually large fish of 5 feet 11 inches to notch of caudal fin, weighing 192½ pounds (from Maryland), has the lobes 2.8 to 3.8 in length, head 1.3 to 1.7 in the lobes.

We have so far found no criteria to differentiate different forms of this Common Yellowfin Tuna as found in Bermuda, on the west coast of Mexico, in Japan, and in New South Wales (Zane Grey, 1937, Field and Stream, June, p. 17, fig.). If one wishes to recognize Atlantic and Pacific fish as provisional races the former would be *Neothunnus albacora albacora* (Lowe), the latter *Neothunnus albacora macropterus* (Temminck and Schlegel).

ALLISON'S TUNA

Neothunnus allisoni (Mowbray)*Thunnus allisoni* Mowbray, 1920, Copeia, No. 78, p. 9, fig. Florida.*Neothunnus itosibi* Jordan and Evermann, 1926, Calif. Acad. Sci., Occ. Papers, XII, p. 22, pl. 6. Hawaii.*Germo albacores*, Fowler, 1928, Mem. Bishop Mus. [Honolulu], X, p. 134.? *Scomber albacores* Bonnaterre, 1788, Encycl. Meth., p. 140. Jamaica.

Large Tuna, with proportionately longer exerted vertical fin-lobes than those of the Common Yellowfin, that of the anal reaching back to the caudal, occur in the

West Indies, southern Florida and the tropical Pacific. They have been described as Allison's Tuna (*Neothunnus allisoni*). Beebe and Tee-Van (1936) consider them to be the adult of the Common Yellowfin Tuna. However, their range seems to be more exclusively tropical; the exerted fin-lobes, when the fish is large enough for these to begin to lengthen, always longer at corresponding sizes. Measurements are given by the above authors for specimens from different Atlantic localities, here assigned partly to *N. albacora* (which see), partly to *N. allisoni*. At a weight of around 100 pounds the fin-lobes of *N. allisoni* from the tropical Pacific compare in development with the maximum attained by the Common Yellowfin. At about 4 feet, 5 to 9 inches, weighing 140 pounds or less, the lobes are contained 2.1 to 2.8 times in standard length, 0.54 to 0.72 times in the head, or head in length of lobes 1.4 to 1.9 (St. Lucia specimens). The type figure of Allison's Tuna, said to have measured 5 feet 9 inches at 147 pounds weight, shows a maximum extension of the lobes, 2.0 to 2.4 in the length, the head 1.6½ to 2 in the lobes. A photograph of a much larger individual from the Hawaiian Islands weighing 321 pounds (which Jordan and Evermann make the type of their *Neothunnus itosibi*) has no longer lobes (2.2 to 2.7½ in the length, head 1.6 to 1.9 in the lobes).

So far as we know *Neothunnus allisoni* occurs outside of the tropics only in Florida as influenced by the Gulf Stream. Jordan and Evermann in referring their *N. itosibi* to Japan, imply that it does there also, presumably as influenced by the Japan current, but this needs verification. Due to the considerable and parallel age changes in both forms, large individuals of the Common Yellowfin are frequently mistaken for Allison's Tuna. This is particularly true on our West Coast where the shorter-finned California Yellowfin is common; but there is no evidence that true Allison's has ever been taken there.

If one wishes to recognize Atlantic and Pacific Allison's Tuna as provisional races, the former would be *Neothunnus allisoni allisoni* (Mowbray), the latter *Neothunnus allisoni itosibi* Jordan and Evermann.

In view of the provisional Atlantic and Pacific races of *albacora* and *allisoni* which may be recognized, it is less confusing to give *allisoni* full specific rank for the time being, though it may well prove to be merely a more tropical race of the former, in which case it would stand as *Neothunnus albacora allisoni* (Mowbray).

CALIFORNIA YELLOWFIN TUNA

Neothunnus catalinae Jordan and Evermann

Neothunnus catalinae Jordan and Evermann, 1926, Calif. Acad. Sci., Occ. Papers, XII, p. 19, Pl. 4. Southern California.

The ordinary Yellowfin Tuna in Southern California waters seems to be a large fish with long pectoral like other Yellowfins but low vertical fin-lobes like a Bluefin Tuna (*Thunnus*). Jordan and Evermann (l. c.) say "Its southern range is not yet known; but between San Diego and Cape San Lucas it seems to give place to the tropical *Neothunnus* [*a.*] *macropterus*." There is at least considerable overlap in the ranges of these two forms; for the 40 inch specimen figured by Walford (1937, Marine Game Fishes, Plate 33), which should be an *N. catalinae* from its fin proportions, he writes it was taken at Maria Madre Island in the Tres Marias at the mouth of the Gulf of California.

LITTLE SILVER-MARKED TUNA

Neothunnus rarus (Kishinouye)

? *Thynnus argentivittatus* Cuvier and Valenciennes, 1831, Hist. Nat. Poiss., VIII, p. 134; Atlantic; East Indies. Nichols and Murphy, 1922, Bull. Amer. Mus. Nat. Hist., XLVI, p. 507, Pl. 25; Peru. Not Beebe and Tee-Van, 1936, Zoologica [N. Y.], XXI (14), p. 184; Bermuda.

Thunnus rarus Kishinouye, 1915, Sui. Gak. Ho. 1, p. 28, Pl. 1, fig. 13. Tokio market.

Kishinoella rara, Jordan and Evermann, 1926, l. c., p. 26. Seas of Japan.

Kishinoella zacalles Jordan and Evermann, 1926, Occ. Pap. Cal. Acad. Sci., XII, p. 27, Pl. 7. Waters about the Hawaiian Islands.

Germo sibi, Fowler, 1928, Mem. Bishop Mus. [Honolulu], X, p. 134, fig. 28, Honolulu.

This is a small species, probably not reaching a length of more than 3 feet or weight of over 30 pounds, scarcely differentiable from the young of the Common Yellowfin, but said to differ from this and other forms of *Neothunnus* anatomically "in the total absence of the air bladder" (Jordan and Evermann, 1926, l. c., p. 25), and on that basis sometimes recognized as a distinct genus (*Kishinoella*). It is notable for having the silvery markings on the lower sides, characteristic of Tunas, particularly prominent and regular.

It is unlikely that there is an Hawaiian form differentiable from the Japanese, but if so it may stand as *Neothunnus rarus zacalles* (Jordan and Evermann). The Peruvian fish referred to this species is perhaps more likely to be differentiable, but this has not been named, or adequately studied.

Tentative analysis of the forms of *Neothunnus*

- (1.) 3 ft. or less long, 30 pounds or less in weight; silvery markings more than usually prominent and regular; air-bladder lacking.

Little Silver-marked Tuna.

Growing to a weight of over 100 pounds; air bladder present—see (2).

- (2). Fish 3 ft. and more long with longest vertical fin lobe 1.8 or more in the head.

California Yellowfin Tuna.

Fish about 3 ft. long with vertical fin lobes 1.5 to 1.9 in the head; 4 ft., 1.2 to 1.3; 5 ft. and more weighing 150 to 200 pounds, with the head 1.3 to 1.7 in the length of the lobes.

Common Yellowfin Tuna.

Fish weighing around 100 pounds with vertical fin lobes comparing with the maximum length reached in the common yellowfin at 150 pounds and more; fish between 4 and 5 ft. long weighing 140 pounds or less with head 1.4 to 1.9 in the lobes; over 5 ft. long weighing over 140 to over 300 pounds with head 1.6 to 2.0 in the lobes.

Allison's Tuna.

